RESERVE COPY

POOR
QUALITY

PATENT SPECIFICATION

Application Date: June 8, 1917. No. 8167/17.

195,100

Accepted, Jan. 11, 1921 (but withheld from Publication under Section 30 of Patents and Designs Acts, 1907 and 1919).

Authorised to be Published: March 5, 1923. Date of Publication: April 19, 1923.

COMPLETE SPECIFICATION.

Improved Apparatus for Selectively Sending Pre-arranged Electric Signals.

I, Archibald Montgomery Low, Captain in His Majesty's Army, of Royal Flying Corps Experimental Works, Feltham, Middlesex, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to apparatus for selectively sending pre-arranged signals and particularly radio-electric signals by means of which operations are performed depending upon the number of impulses transmitted, the apparatus being of the kind in which a number of discs or the like are loosely and independently mounted upon a rotating shaft and are provided with appropriate projections or depressions adapted to operate contact points in proximity to their peripheries for the purpose of sending the required signals, stop pins being provided in conjunction with suitable stop arms for normally preventing the discs from rotating.

The object of the present invention is to provide an improved form of apparatus of this character and the invention consists in signalling apparatus of the kind referred to in which each of the discs is provided with a second stop pin adapted to come into contact with the stop arm after the required number of signals has been sent and to bring the disc to rest.

By depressing a handle or the like any one of the stop arms may be removed from engagement with the corresponding pin leaving the corresponding disc free to be rotated by means of a friction clutch or the like. Each disc is provided with a second stop pin which comes into engagement with the arm after the required number of signals has been sent and before the disc has made a complete revolution thus bringing the disc to rest.

If now the above mentioned handle or the like be released the disc continues to rotate until the first mentioned stop pin comes into engagement with the arm and during its rotation the disc is adapted to send a releasing or annulling signal so that it is clear that the releasing signal must be sent by any given disc before the said disc is again in a position to send operative signals.

In a modified form of improved apparatus the discs are secured to or are formed on two or more sleeves or the like which are rotatably mounted to the fixed spindles and adapted to be driven by means of convenient clutches.

A suitable selective operating device is provided by means of which any one of the sleeves may be moved axially over its spindle in order to bring any one of the discs into position to operate a single pair of contact points.

The accompanying drawings illustrate one convenient form of apparatus constructed in accordance with the invention.

Figure 1 is a side elevation of the complete apparatus.

Figure 2 is an end elevation.

Figure 3 is an elevation partly in section of a modified form of the apparatus and

Figure 4 is a section on the line A—B of Figure 3.

The apparatus shown in Figs. 1 & 2 comprises a shaft 7, which is rotated at a constant speed by an electric motor, the spindle of which has secured to it a small gear wheel which gears with the wheel 8 secured to the shaft 7. Loosely mounted on the shaft 7 are a number of discs

[*Price* 1/-]

POOR QUALITY

1, 2, 3, 4, 5, 6, of aluminium or other suitable material, the number of such discs being equal to the number of different signals it is desired to send. These discs are driven by friction clutches comprising collars 9, 10, 11, 12, secured to the shaft 7 the discs being pressed against these clutches by springs 13, 14, 15, which abut against collars 16, 17, 18 mounted on the shaft 7 by means of feather keys or the like. Suitably arranged near the rims of the discs are pairs of contact strips 19, 20, 21, 22, 23, 24, the closing of these contacts being adapted to send the required signals. These contact strips are attached to insulating blocks 25, 26, which are secured to suitable pillars 27, 28, and they are pressed together at the required intervals, when the discs are free to rotate, by suitable projections 29 (Fig. 2) secured to the rims of the discs. The number of such projections occurring on any one disc determines the number of times the said disc will close the contact during one complete rotation of the shaft 7. Thus, in the arrangement shown, disc 1, has two projections, disc 2 has three projections and so on, the disposition of these projections being clearly indicated in Fig. 2 in which each of the projections shown has against it a number representing the number of the disc on which it occurs. Each of the discs is also provided with a projection 30 for a purpose to be hereafter described.

In order to allow any one of the discs—1 to 6—to rotate to send the required signal, whilst the others remain stationary the discs are provided with stop pins 31 which normally abut against stop arms 32, and prevent the discs from rotating. These arms are secured to collars 33 loosely mounted on the shaft 34. Also secured to the collars 33 are arms 35 terminating in handles 36, so that by pulling down any one of these arms against the spring 37 the corresponding arm 32 is removed from engagement with the pin 31 and the disc is allowed to rotate. If the arm 35 be held down in contact with the bar 38 the disc continues its rotation (in an anti-clockwise direction as seen in Figure 2) closing the corresponding contacts the required number of times until a second stop pin 39 on its face comes against the arm 32 and stops the disc. If now the arm 35 be released the arm 32 moves out of engagement with the pin 39 and the disc continues its rotation until the arm 32 comes against the pin 31. During the rotation of the disc from pin 39 to pin 31 the contacts are closed by the projection 30, this projection being arranged to give a comparatively long period of closing and to send a releasing or annulling signal.

In the modified form of the apparatus shown in Figures 3 and 4, the discs 44, 45 are formed on, or secured to, sleeves 46, 47, which can revolve loosely over the fixed spindles 48, 49. The sleeves 46, 47 are driven through the medium of friction clutches 50, 51, from the gear wheels 52, 53, which are also loosely mounted on the spindles 48, 49, both these wheels being driven by a wheel 54 secured to a shaft 55 which is driven, either directly or through gearing, from a suitable prime mover, such as an electric motor. The spindles 48, 49, are secured between the end plates of a casing 56 and have mounted on them pairs of compression springs 57, 58, 59, 60, which serve to maintain the clutches in operation. Secured to the sleeves 46, 47, at positions between the pairs of discs 44, 45 are stop arms 61, 62, adapted to abut against suitable portions of the casing and to prevent the sleeves from revolving. The contact arm 63 is pivoted in a suitable bracket 64 between the discs 44, 45, and is made integral with two projections 65, 66, adapted to be operated by the discs 44, 45 respectively. The discs can be moved axially over the spindles 48, 49, by any suitable mechanism such, for example, as that employed for changing the gears of motor cars.

Supposing the discs 45 to be moved to the right as seen in Figure 3 when the arm 62 has moved out of engagement with the casing, the discs 45 are free to revolve and the projections 67 on the left hand disc operate the arm 66 and close the contacts 68 the required number of times. When these signals have been sent the disc is again brought to rest owing to the stop pin 69 abutting against the casing. If now the disc be allowed to return to its original position it will continue its rotation until the arm 62 again abuts against the casing and during this period of return the contacts 68 will be closed for a comparatively long period to send a releasing or annulling signal, by means of a projection 70, situated on the inner portion of the periphery of the disc, as indicated in Figure 3 on the discs 44.

The pivoted member 63 may have secured to it a laminated spring 71 adapted to enter a slot in the casing and to re-open the contacts 68 after they have been closed by the projections 67 acting on the arms 65, 66.

In a further modification the discs shown in Figure 1 are replaced by a number of discs constructed of an insulating material, for example, fibre, into which are let the required number of segments

POOR
QUALITY

constructed of a suitable conducting material. The segments are connected to rotating contact rings on which work brushes connected to a suitable terminal or the like. As before described the discs are driven by friction clutches, are provided with stop pins and may be released, so as to be free to rotate, by operating the appropriate handles. A record of the signals may be made, if desired, by any well-known means.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. Signalling apparatus of the kind referred to in which each of the discs is provided with a second stop pin adapted to come into contact with the stop arm after the required number of signals has been sent and to bring the disc to rest, substantially as described.

2. Signalling apparatus as claimed in Claim 1 in which each of the discs is provided on that part of its periphery between the two stop pins with a projection adapted to close the contact points for a comparatively long period in order to send a releasing or annulling signal substantially as described.

3. An apparatus for sending signals of the kind referred to in which the discs are formed on or secured to a number of rotatable sleeves, means being provided whereby any one sleeve may be moved axially to bring any desired disc into position to operate a single pair of contact points, substantially as described.

4. Improved signalling apparatus constructed, arranged and operating, substantially as hereinbefore described and as illustrated by the accompanying drawings.

Dated this 21st day of May, 1917.

MARKS & CLERK.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1923.

[This Drawing is a reproduction of the Original on a reduced scale]

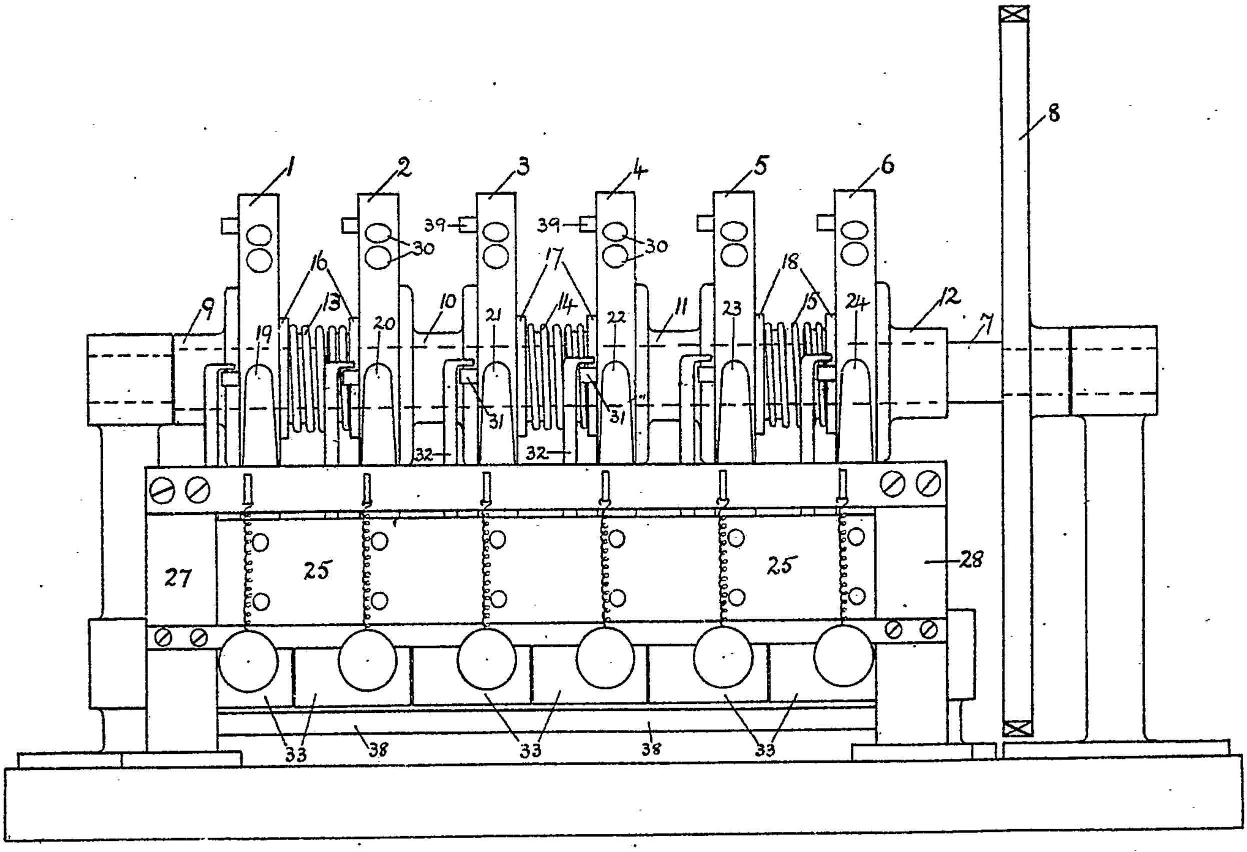
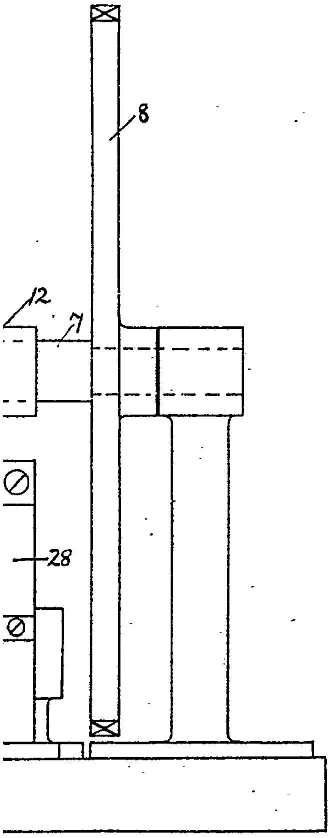


FIG. 1

SHEET 1



SHEET 2

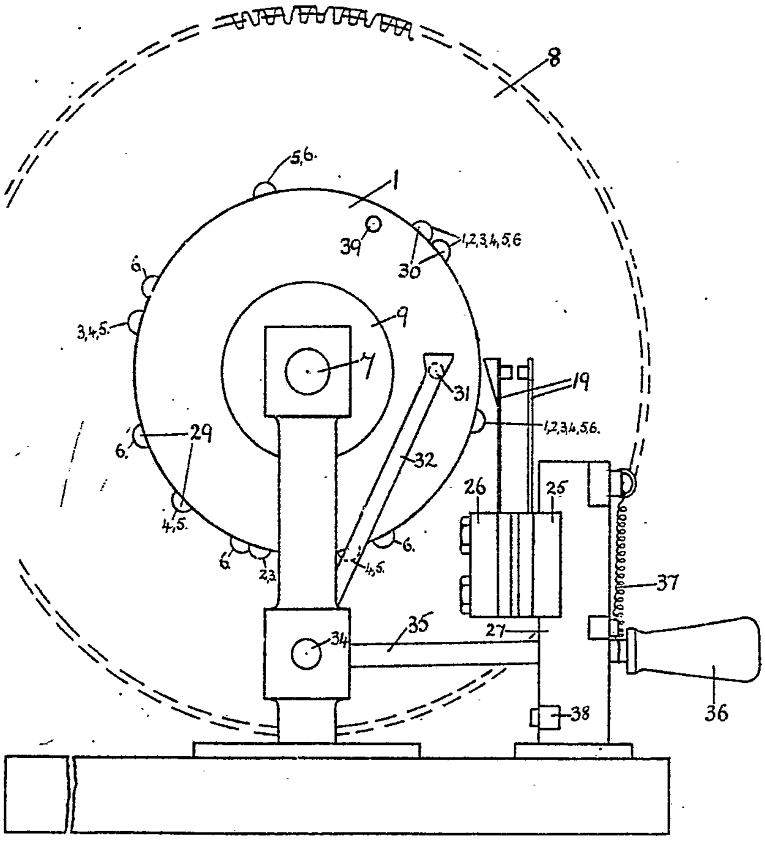


FIG. 2

Malby&Sons, Photo-Litho

SHEET 1

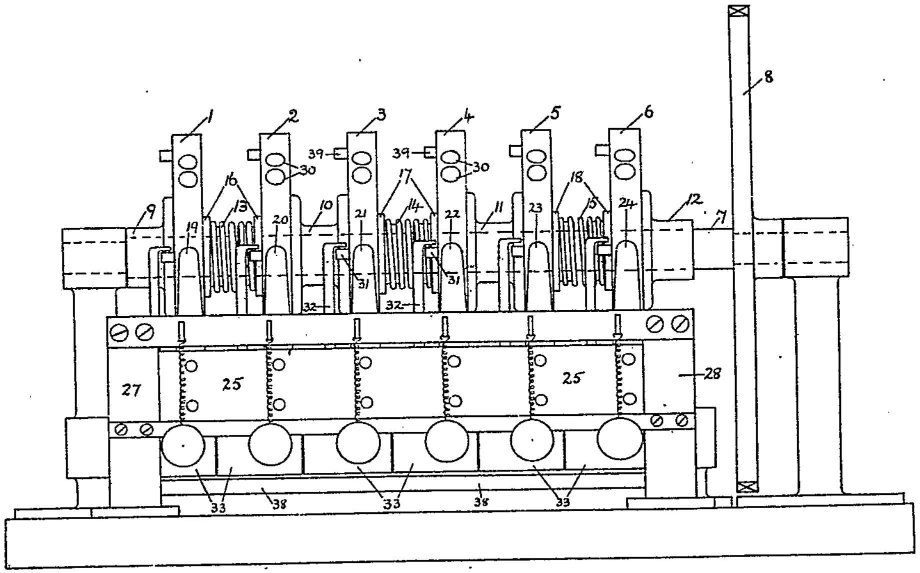


FIG. 1

SHEET 2

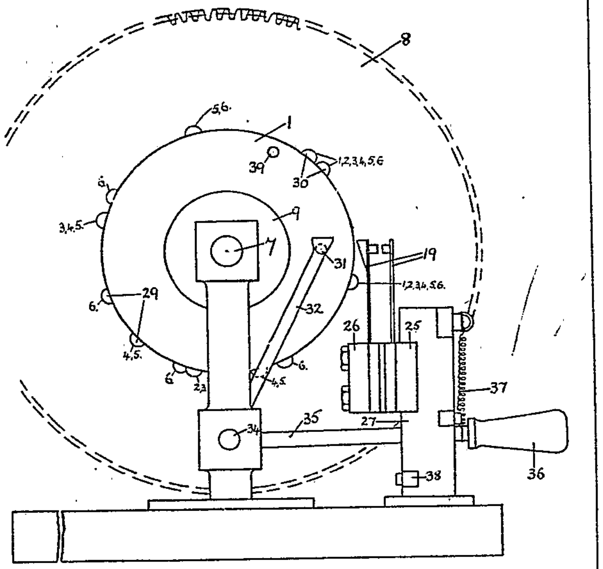


FIG. 2

[This Drawing is a reproduction of the Original on a reduced scale]

Malby&Sons, Photo-Litho

[This Drawing is a reproduction of the Original on a reduced scale]

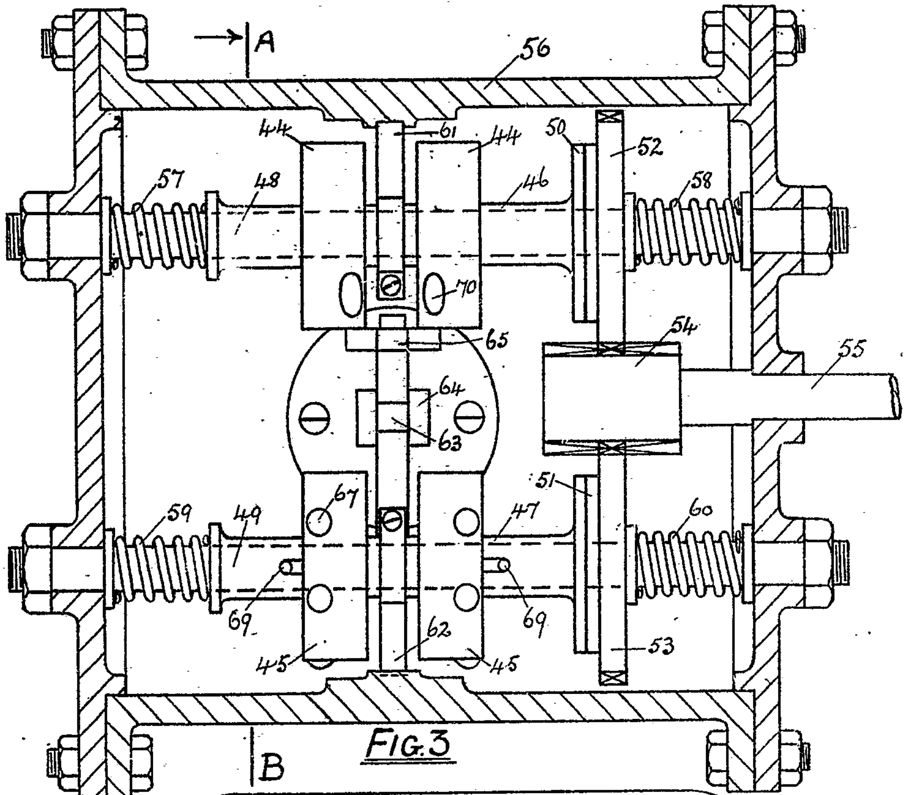


FIG. 3

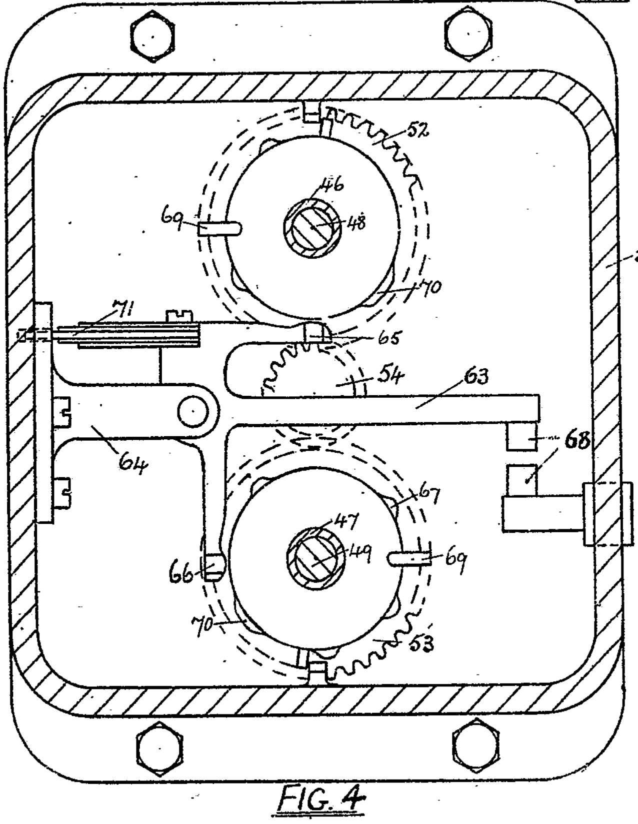


FIG. 4

Malby & Sons, Photo-Litho